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# Boys and Road Rage: Driving-Related Violence and Aggression in Western Australia

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**T**his article reports on the results of a population survey of 1208 West Australian drivers designed to measure the prevalence of driving-related violence and aggression as well as perceptions of these behaviours. A clear distinction is made between driving-related violence (restricted to criminal acts of violence, threats of violence and vehicle damage) and other aggressive driving behaviours. Although the majority of survey respondents had experienced some form of aggressive driving behaviour, only 13% reported ever being a victim of driving-related violence. However, 17% of respondents believed they were likely, or very likely, to be a victim of driving-related violence within the coming year. More than two thirds of respondents thought their likelihood of being a victim of driving-related violence had increased over the past 10 years. Both aggressive driving behaviours and driving-related violence were typically perpetrated by young males against other males. The article concludes with a discussion of the masculinist characteristics of road rage and what this implies for the prevention of this crime.

Road rage is a term that has come into common use over the past decade. It is used broadly and imprecisely to refer to a range of driving-related behaviours and experiences. Behaviours that have been included range from verbal abuse, gestures and horn-honking through aggressive driving practices to threats, assaults and, in extreme cases, murder. Only the most serious end of this spectrum, those incidents resulting in violence or threats of violence, constitute criminal acts. However, in this article we use the term as it is generally understood to refer to both aggressive as well as violent driving-related behaviours.

Road rage has received considerable media attention across the western world over the last decade (Lupton, 2001; Marshall & Thomas, 2002; Roberts & Indermaur, 2003b; Smart & Mann, 2002). It is not unusual to find the term road rage associated with sensational allusions such as 'exploding phenomenon', 'plague' and 'epidemic' (Glassner, 1999). Despite the media interest, limited research has been conducted to establish the prevalence of behaviours referred to as road rage.

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The research that has been conducted has primarily focused on the less serious end of the road rage continuum, such as verbal abuse, obscene gestures and horn-honking. The major aim of this article is to establish the self-reported prevalence of road rage, both in terms of those acts that could be classed as a form of criminal violence and also those driving behaviours that involve anger and/or aggression but are not crimes. A secondary aim of this article is to explore public perceptions of these behaviours.

Preliminary endeavours to establish the prevalence of road rage behaviours have typically employed a survey methodology. In Britain, three questions on aggressive driving behaviours were included in a supplement to the 1998 British Crime Survey (Mirrlees-Black, Budd, Partridge, & Mayhew, 1998).<sup>1</sup> The majority (52%) of the 4565 respondents reported experiencing verbal abuse or gestures from other drivers in the previous 12 months. A small proportion (3%) of respondents reported that they had been threatened with violence by another driver but almost one in 10 (9%) indicated that they had been forced to pull over or were forced off the road during this same time span (Marshall & Thomas, 2000).

Smart, Mann and Studoto (2003) employed a telephone survey to establish the 12-month self-reported prevalence of victimisation and perpetration of road rage in Ontario, Canada. Nearly half (47%) of the 1395 survey respondents reported being the victim, or being with someone else who was the victim, of shouting, cursing or rude gestures by someone in another vehicle over a 12-month period. Almost a third of respondents (32%) reported perpetrating these activities. Over the same period 7% reported being the victim, or being with someone else who was the victim, of driving-related violence. However, only 2% of survey respondents admitted to perpetrating such violence.

Population surveys have also been conducted within Australia to establish the prevalence of driving-related violence and aggressive driving (AAMI, 2003; Roy Morgan Research Centre, 1996; Victorian Community Council Against Violence, 1999). In addition, further Australian research (Cameron, Bartholomaeus, Lee, Xiao, & Hocking, 1999; Mayhew & Quinlan, 2001) has examined self-reports of victimisation in nonrepresentative subpopulations. The salient details of the Australian studies are summarised in Table 1. While the prevalence estimates vary widely, surveys typically reveal a high prevalence of victimisation for aggressive driving behaviours but a much lower prevalence of driving-related violent acts.

The survey research conducted to date has been subject to a number of limitations. First, the sample sizes have generally been inadequate to produce reliable estimates for the population or subpopulations. Second, many of the surveys focused on aggressive road rage behaviours to the exclusion of criminal driving-related violence (e.g., Marshall & Thomas, 2000; Smart et al., 2003). Third, comparing across studies is difficult given the differing time periods (e.g., lifetime vs. 1-year prevalence) and the differing groupings of road rage behaviours (e.g. the reporting of multiple behaviours in one category in some studies vs. individual behaviours in others). In addition, differing definitions of victims (respondent only vs. any occupant in the vehicle) were used across surveys. Where surveys include people other than the individual respondent as victims the prevalence rates will obviously be much higher. Finally, not all studies have clearly established the abuse or threats as being driving-related. For example, Smart et al. (2003) simply prefaced their

**TABLE 1**  
**Australian Survey Research Estimating the Prevalence of Road Rage Behaviours**

Authors	Location	Survey type	Pop.	N	Prevalence: victims	Prevalence: perpetrators	Time period
AAMI (2003)	Australia	T	Lic. drivers	1601	75% gestures 58% verbal abuse 5% physically assaulted	20% rude gestures 9% tailgate /flash lights	unstated
Cameron et al. (1999)	Western Australia	M	Drivers 50+	834	27.5% verbal abuse 46.3% gestures 2.1% physical/ vehicle abuse 7.5% forced off road	—	unstated unstated unstated
Mayhew & Quinlan (2001)	New South Wales	I	Truck drivers	300	21% road violence undefined	—	1 year
Roy Morgan Research Centre (1998)	Australia	T	Aged 14+	641	75% gestures 62% verbal abuse 20% chased by another vehicle 10% vehicle damaged 4% physically attacked	—	life-time life-time life-time life-time
VCCA (1999)	Victoria	T	Drivers	801	58% 'mild' road rage 35% 'severe' road rage 2% assault/ attempted assault	37% 'mild' road rage 7% 'severe' road rage 0% assault/ attempted assault	1 year life-time life-time

Note: Survey type: T = telephone; M = mail; I = interview.

questions about behaviours with 'Now some questions about things that might have happened when you are driving or a passenger in a car, van, truck or motorcycle'. With such a wide definition it is quite possible that incidents that are not generally considered road rage (e.g., continuing disputes between familiars) may have been included in the prevalence estimates. The issue of the definition of road rage clearly affects efforts to measure the phenomenon and thus is a matter of primary importance.

Harding, Morgan, Indermaur, Ferrante and Blagg (1998) developed a highly specific definition of criminal road rage as 'impulsive driving related violence between strangers' (p. 224). Their research sought to establish the prevalence of such incidents recorded by the West Australian police during the 5-year period from 1991 to 1995 and was extended by Roberts and Indermaur (2003a) to cover the period from 1996 to 2000.

Prevalence was established using a two-stage process: computer-based offence selection followed by manual sorting. First, all police offence records for physical assaults, threats and driving causing death or bodily harm occurring between 1991 and 2000 in the Offence Information System of the Western Australian Police Force were filtered by a computer program that selected only those offences that occurred between strangers in a street, road, vehicle or car park. The narrative sections of the 19,979 selected offence records were then reviewed to determine whether the violence involved was indeed spontaneous and driving-related.<sup>2</sup> Cases where insufficient information was available or where the nature of the assault was ambiguous were excluded. The review reduced the set to 2201 incidents that could be labelled driving-related assaults or threats.

Roberts and Indermaur (2003a) reported that the number of incidents of driving-related assaults and threats per 100,000 vehicles increased over the 10 years from 1991 to 2000. However, when these incidents were considered as a subset of all stranger assaults, which is the most appropriate traditional categorisation for this type of assault, the apparent increase disappeared. As a percentage of all street assaults by strangers reported to the police, road rage incidents remained at a constant (between 10% to 11%) over the 10-year period (Roberts & Indermaur, 2003a). In other words, driving-related street assaults between strangers had not increased any more than other stranger street assaults. It was argued that the increase in recorded road rage incidents (and stranger assaults generally) may have been a function of the greater likelihood of reporting and police recording of such reports rather than any real change in the risks of this behaviour.

There were two major limitations of this previous research in establishing the prevalence of road rage. First, it excluded all cases of road rage not reported to, or recorded by, the police. As the likelihood of road rage offences being reported to the police has not been established, it is not possible to estimate the true prevalence of criminal road rage acts from police reports. Second, in contrast to the survey research, this research had an exclusive focus on road rage as criminal acts.

In this article, we aim to extend and overcome some of the limitations of previous research by reporting the findings of a population survey designed to measure the prevalence of driving-related violence and aggression and public perceptions of road rage.

## **Method**

A population survey of West Australian adult drivers was conducted using Computer Assisted Telephone Interviewing (CATI). A random sample of households stratified by metropolitan/nonmetropolitan area was drawn from an electronic version of the White Pages telephone directory for Western Australia.<sup>3</sup> In each household contacted, the interviewer asked to speak to the youngest male driver

**TABLE 2**  
Representativeness of the Survey Sample

	WA population		Sample	
	<i>n</i>	%	<i>n</i>	%
Male				
18–29	167,414	11.4	134	11.1
30–49	294,766	20.1	249	20.6
50+	266,505	18.2	224	18.5
Total	728,685	49.6	607	50.2
Female				
18–29	161,360	11.0	111	9.2
30–49	295,348	20.1	258	21.4
50+	282,658	19.3	232	19.2
Total	739,366	50.4	601	49.8
Persons				
18–29	328,774	22.4	245	20.3
30–49	590,114	40.2	507	42.0
50+	549,163	37.4	456	37.7
Total	1,468,051	100.0	1208	100.0

aged over 18 years.<sup>4</sup> If nobody met this criterion, random sampling (based on last birthday) was used to select a driver from the household. A policy of no replacements within the household was enforced where the individual selected refused to participate. A minimum of six call-backs was made to contact each household before dropping the household from the sample. The response rate for the survey, expressed as a cooperation rate,<sup>5</sup> was 65.7%, and was judged as acceptable for the proposed analysis.<sup>6</sup>

To ensure a representative sample by age group (18–29, 30–49, 50+) and sex (male, female) was obtained, quota sampling was employed towards the end of the survey, with interviewing for each category stopped once the quota has been obtained. A comparison of age and sex groupings in the population (ABS, 2003b) and the survey sample are presented in Table 2. While the sample has a slight bias towards drivers aged over 30, the overall match of the distribution of the sample to the population was judged adequate for unweighted analysis of the data.

### Participants

The full sample consisted of 1208 Western Australian drivers. Approximately two thirds (65.1%) of research participants lived in the metropolitan area. Almost all (99.3%) survey respondents had a current driving license. Driving experience ranged from new drivers with limited experience to a driver with 75 years' driving experience (*M* 26.1 years, *SD* 14.9 years). The hours spent driving ranged up to 115

**TABLE 3**  
Self-Reported Prevalence of Criminal Road Rage Vicimisation by Age and Sex

Criminal act	Life-time prevalence										2-year prevalence					
	Male		Female		Persons		Sig. <sup>10</sup>	Sig. Age	Male		Female		Persons		Sig. Sex	Sig. Age
	n	%	n	%	n	%			n	%	n	%	n	%		
<b>Assault</b>																
18-29	11	8.2	2	1.8	13	5.3			7	5.2	0	0	7	2.9		
30-49	10	4.0	4	1.6	14	2.8			3	1.2	1	0.4	4	0.8		
50+	9	4.0	3	1.3	12	2.6			5	2.2	1	0.4	6	1.3		
All ages	30	4.9	9	1.5	39	3.2	.005	ns	15	2.5	2	0.3	17	1.4	.005	*
<b>Threat</b>																
18-29	22	16.4	4	3.6	26	10.6			14	10.4	3	2.7	17	6.9		
30-49	43	17.3	19	7.4	62	12.2			20	8	10	3.9	30	5.9		
50+	29	12.9	14	6	43	9.4			14	6.3	6	2.6	20	4.4		
All ages	94	15.5	37	6.2	131	10.8	.001	ns	48	7.9	19	3.2	67	5.5	.001	ns
<b>Vehicle damage</b>																
18-29	9	6.7	4	3.6	13	5.3			5	3.7	3	2.7	8	3.3		
30-49	15	6	6	2.3	21	4.1			6	2.4	4	1.6	10	2.0		
50+	13	5.8	4	1.7	17	1.7			7	3.1	1	0.4	8	1.8		
All ages	37	6.1	14	2.3	51	4.2	.005	ns	18	3	8	1.3	26	2.2	ns	ns
<b>All criminal road rage</b>																
18-29	25	18.7	7	6.3	32	13.1			17	12.7	5	4.5	22	9.0		
30-49	53	21.3	20	7.8	73	14.4			25	10	11	4.3	36	7.1		
50+	42	18.8	16	6.9	58	12.7			21	4.9	7	3	28	6.1		
All ages	120	19.8	43	7.2	163	13.5	.001	ns	63	10.4	23	3.8	86	7.1	.001	ns

Note: Total N = 1208  
\*cell sizes too small to test significance

hours per week (median 10 hours per week).<sup>7</sup> One eighth (12.9%) of survey respondents had been employed as a driver of some sort in the previous 2 years.<sup>8</sup>

Survey respondents reported a range of past driving offences. Almost one fifth (18.6%) had had their license suspended, one in 10 (9.4%) had been convicted of drink-driving offences and one in 25 (3.7%) had been convicted of dangerous driving offences. About a third (36.9%) had received at least one speeding ticket in the previous 2 years.

### **Instrument**

The survey instrument consisted of three modules. The base module, answered by all respondents, included questions about personal experience of driving-related violence and aggression, knowledge and perceptions of road rage, driving history and demographic questions. The victim module and perpetrator module were answered only by respondents who had been a victim or perpetrator of driving-related violence respectively in the previous 2 years. These modules consisted of questions concerned specifically with the last incident of driving-related violence experienced.

### **Results**

The results are presented in three sections, consistent with the major aims of the research. The first two sections present the prevalence of driving-related violence and aggressive driving behaviours. The third section explores public perceptions of road rage.

#### **Prevalence of Violence Associated With Driving**

Road rage was defined for all respondents for the purpose of the survey as 'situations where a driver acts aggressively or violently towards another driver, bike rider or pedestrian as a result of some perceived conflict while driving'. To establish the life-time prevalence of criminal driving-related violence all survey respondents were asked whether they had *ever* (a) been hit, pushed, punched or assaulted in any way, (b) been threatened with violence or (c) had their vehicle damaged as a result of road rage. They were also asked if they had *ever* engaged in these behaviours. Respondents who answered questions in the affirmative were asked how many times this had occurred in the last 2 years. The self-reported life-time and 2-year prevalence of criminal road rage victimisation and perpetration are displayed in Tables 3 and 4 respectively.

In total, one in seven (13.5%) of survey respondents reported ever being a victim of criminal road rage. More than half of these victims reported an incident in the last 2 years. As shown in Table 3, males were significantly more likely than females to report ever being assaulted, being threatened or having their vehicle damaged. One in five males reported being victims of what could be classed as criminal road rage compared to one in 14 females. Taking into account the higher exposure of males to driving that was noted earlier (males drive on average 1.5 times as much as females) the equivalent figure for females if males and females were equally likely to be victims would be 13.2%, a figure which is actually twice the female victimisation rate recorded in Table 3.

**TABLE 4**  
Self-Reported Prevalence of Criminal Road Rage Perpetration by Age and Sex

Criminal act	Life-time prevalence										2-year prevalence					
	Male		Female		Persons		Sig. Sex	Sig. Age	Male		Female		Persons		Sig. Sex	Sig. Age
	n	%	n	%	n	%			n	%	n	%	n	%		
Assault																
18-29	9	6.7	0	0	9	3.7			6	4.5	0	0.0	6	2.4		
30-49	7	2.8	1	0.4	8	1.6			3	1.2	1	0.4	4	0.8		
50+	4	1.8	0	0.0	4	0.9			2	0.9	0	0.0	2	0.4		
All ages	20	3.3	1	0.2	21	1.7	.001	*	11	1.8	1	0.2	12	1.0	.005	*
Threat																
18-29	13	9.7	1	0.9	14	5.7			9	6.7	1	0.9	10	4.1		
30-49	10	4.0	3	1.2	13	2.6			4	1.6	2	0.8	6	1.2		
50+	3	1.3	0	0.0	3	0.1			2	0.9	0	0.0	2	0.4		
All ages	26	4.3	4	0.7	30	2.5	.001	.001	15	2.5	3	0.5	18	1.5	.01	*
Vehicle damage																
All ages	5	0.8	0	0.0	5	0.4	*	*	3	0.5	0	0.0	3	0.2	*	*
All criminal road rage																
18-29	17	12.7	1	0.9	18	7.3			11	8.2	1	0.9	12	4.9		
30-49	16	6.4	4	1.6	20	3.9			8	3.2	3	1.2	11	2.2		
50+	5	2.2	0	0.0	5	1.1			2	0.9	0	0.0	2	0.4		
All ages	38	6.3	5	0.8	43	3.6	.001	.001	21	3.5	4	0.7	25	2.1	.005	.001

Note: Total N = 1208

\*cell sizes too small to test significance



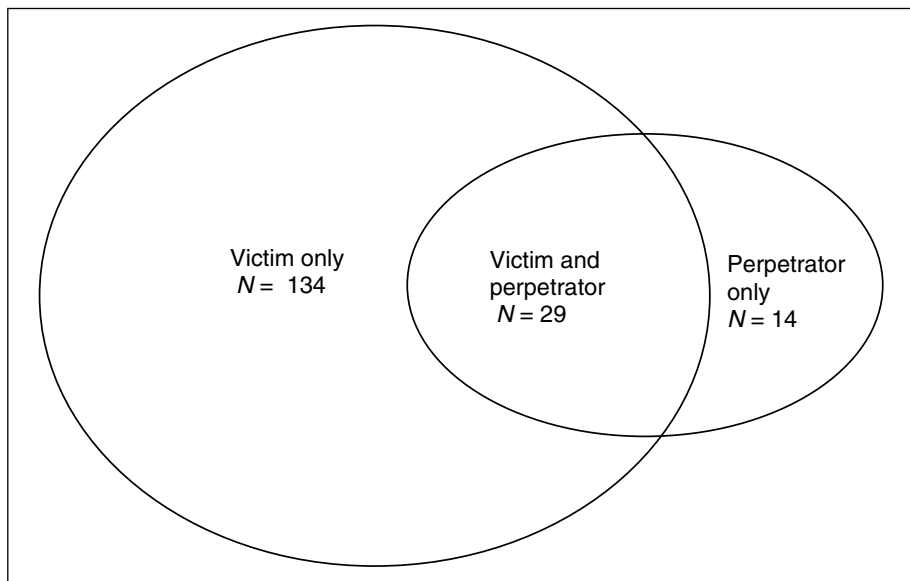
What this means is that adjusting for higher male exposure to the road still leaves females with a victimisation rate about half of the equivalent male rate.

There were no significant differences in the prevalence of victimisation by age group. However, examination of the 2-year victimisation prevalence<sup>9</sup> shows a consistent pattern of higher rates of victimisation for young males than any other group for each of the offences. For example, the 2-year prevalence of assault indicates the rate of assault against young males was more than double that of any other group. However, this association was not able to be tested statistically due to the small numbers involved.

Only one in 30 (3.6%) of survey respondents reported ever being a perpetrator of an act that could be classed as criminal driving-related violence. As shown in Table 4, males were almost eight times more likely than females to be perpetrators. Again this difference clearly dwarfs any adjustment to this comparison we may make to account for the higher (1.5 times) degree of male exposure to the road. Members of the younger age group (aged 18–29) were significantly more likely than other age groups to self-report ever being a perpetrator.

As shown in Figure 1, a total of 177 survey respondents (14.7%) reported ever being involved in a violent driving-related incident as victim or perpetrator. Of these, 76% were involved as a victim only, 7.9% as a perpetrator only and 16.8% reported being both a victim and a perpetrator.

Survey respondents who had experienced a driving-related violent incident in the previous 2 years were asked for more information about the circumstances preceding the offence, the offence itself and action taken after the offence. The three most



**FIGURE 1**

Relationship between victims and perpetrators of road rage criminal acts.

commonly reported locations for road rage incidents for both victims and perpetrators were at traffic lights (victims 38.4%, perpetrators 40%), at the side of the road (victims 19.8%, perpetrators 28%) and in car parks (victims 17.4%, perpetrators 24%). The driving incident preceding the violent act was typically one car cutting off another car (victims 33%, perpetrators 53%). Other incidents commonly reported by victims were tailgating (16.3%) and disputes over parking spots (15.1%).

Information on their most recent driving-related violent incident was obtained from 25 perpetrators and 86 victims. Perpetrators reported that in three incidents a weapon was used, and in three incidents the other party was injured. In half of the incidents where threats were made the perpetrator claimed there was no intention to carry out the threat. Victims reported that in 13 cases (15.1%) the perpetrator had a weapon, in five cases (5.8%) the victim was injured and in one case sought medical help or first aid. In half of the incidents where threats were made, the victim said they believed the perpetrator would carry out the threat.

Data from victims indicated that one in five offences (20.9%) was reported to the police. Similarly, one in five perpetrators reported that police had contacted them about the incident, although none were charged with an offence. The majority of both victims (80.2%) and perpetrators (88%) felt the other party was to blame for the incident. The majority of perpetrators (72%) stated they would react in the same way if the incident happened again.

Respondents were also asked whether they personally knew anyone who had been involved in driving-related violent incidents in the past 2 years. Almost one quarter of respondents (23%) indicated that they did (assault, 12.9%, threat, 18.4%, vehicle damage, 8.9%). Almost one in 10 respondents (9.3%) knew someone who had been a perpetrator of such violence in the past 2 years (assault 5%, threat 7.7%, vehicle damage, 2.2%).

### **Prevalence of Aggressive Driving Behaviours**

All survey respondents were asked how frequently they had experienced (as victim or perpetrator) a range of aggressive driving behaviours in the past 2 years. The percentages of males and females who either perpetrated or were victimised by these behaviours are presented in Table 5. Males were significantly more likely than females to engage in shouting abuse, obscene gesturing, flashing lights, tailgating and braking aggressively. Males were also significantly more likely than females to be on the receiving end of obscene gestures, flashed lights and aggressive braking.

There were also significant differences by age groups. Young drivers (aged 18 to 29) were the most likely, and older drivers (aged 50+) the least likely, to engage in each of the aggressive behaviours. Young drivers were also more likely than other drivers to have been on the receiving end of all aggressive driving behaviours with the exception of obscene gestures.

### **Public Perceptions of Road Rage**

Survey respondents were asked if they had ever heard of the term road rage. The vast majority of respondents (96.8%) said they had. They were then asked what they understood road rage to be. Thirteen of these respondents (1.1 %) were unable to provide a definition or provided information that did not fit within common

**TABLE 5**  
Prevalence of Aggressive Driving Behaviours

Behaviour	Victim						Perpetrator									
	n	%	Male	n	%	Sig.	n	%	Female	n	%	Sig.	n	%	Sig.	
<b>Shouted abuse</b>																
18-29	103	76.9	89	80.2	192	78.4	59	44.0	57	51.4	116	47.3				
30-49	178	71.5	179	69.4	357	70.4	111	44.6	97	37.6	208	41.0				
50+	153	68.3	134	57.8	287	62.9	70	31.3	17	7.3	87	19.1				
All ages	434	71.5	402	66.9	836	69.2	240	39.5	171	28.5	411	34.0	.001	.001	.001	.001
<b>Obscene gestures</b>																
18-29	95	70.9	68	61.3	163	66.5	57	42.5	30	27.0	87	35.5				
30-49	175	70.3	165	64.0	340	67.1	95	38.2	53	20.5	148	29.2				
50+	161	71.9	131	56.5	292	64.0	38	17.0	12	5.2	50	11.0				
All ages	431	71.0	364	60.6	795	65.8	190	31.3	95	15.8	285	23.6	.001	.001	.001	.001
<b>Flashed lights</b>																
18-29	75	56.0	64	57.7	139	56.7	42	31.3	20	18.0	62	25.3				
30-49	81	32.5	77	29.8	158	31.2	53	21.3	30	11.6	83	16.4				
50+	80	35.7	54	23.3	134	29.4	28	12.5	15	6.5	43	9.4				
All ages	236	38.9	195	32.4	431	35.7	123	20.3	65	10.8	188	15.6	.001	.001	.001	.001

**TABLE 5** Continued  
Prevalence of Aggressive Driving Behaviours

Behaviour	Victim						Perpetrator								
	Male		Female		Persons		Male		Female		Persons		Sig. Age	Sig. Sex	Sig. Age
	n	%	n	%	n	%	n	%	n	%	n	%			
<b>Blasted horn</b>															
18-29	84	62.7	69	62.2	153	62.4	60	44.8	64	57.7	124	50.6			
30-49	141	56.6	122	47.3	263	51.9	130	52.2	103	39.9	233	46.0			
50+	123	54.9	121	52.2	244	53.5	63	28.1	52	22.4	115	25.2			
All ages	348	57.3	312	51.9	660	54.6	253	41.7	219	36.4	472	39.1	ns		.001
<b>Tailgated</b>															
18-29	70	52.2	67	60.4	137	55.9	27	20.1	15	13.5	42	17.1			
30-49	114	45.8	106	41.1	220	43.4	29	11.6	11	4.3	40	7.9			
50+	109	48.7	103	44.4	212	46.5	7	3.1	8	3.4	15	3.3			
All ages	293	48.3	276	45.9	569	47.1	63	10.4	34	5.7	97	8.0	ns	.005	.001
<b>Braked aggressively</b>															
18-29	39	29.1	37	33.3	76	31.0	29	21.6	14	12.6	43	17.6			
30-49	84	33.7	59	22.9	143	28.2	28	11.2	15	5.8	43	8.5			
50+	51	22.8	44	19.0	95	20.8	11	4.9	7	3.0	18	3.9			
All ages	174	28.7	140	23.3	314	26.0	68	11.0	36	6.0	104	8.6	.05	.005	.001

Note: Total N = 1208

conceptions of road rage. Content analysis of the remaining responses revealed that 444 (38.4%) contained an emotional or attitudinal component (e.g., anger, impatience), 311 (26.9%) an action component (e.g., verbal abuse, physical violence or aggressive driving) and 377 (29.2%) contained both an emotional and a behavioural component.

After providing a standard definition of road rage (see above), survey respondents were asked how much of a problem road rage was for them, personally. Almost half (45%) of respondents said road rage was not a problem for them. A further third (37.3%) indicated that road rage was something they were occasionally concerned about. About one in eight respondents (12.3%) indicated that they were quite concerned about road rage, one in 25 (3.9%) that they had been significantly affected by road rage at some point in their life and of particular concern were the 19 respondents (1.6%) who said they thought about it all the time.

Respondents were asked to estimate their likelihood of being assaulted, threatened or having their vehicle damaged as a result of road rage in the next year. While the majority thought it was very unlikely (39.7%) or unlikely (42.5%), a substantial minority thought it was likely (12.5%), very likely (4.0%), or didn't know (1.2%). Knowing someone who had previously been a victim of road rage increased the likelihood that a respondent would rate their own chances of being a victim highly, that is, likely or very likely,  $\chi^2(1) = 20.5, p < .001$ .

The majority of respondents (70.8%) estimated that their likelihood of being a victim of road rage had increased over the past 10 years, with only 5% believing it had reduced. Older drivers (aged over 30 years) were significantly more likely than younger drivers (aged 18–29 years) to state that the likelihood had increased,  $\chi^2(4) = 21.1, p < .001$ . In regard to this belief there were no significant differences by sex. Victims of road rage were significantly more likely than those who were not to believe that their likelihood of being a victim of road rage had increased,  $\chi^2(4) = 24.5, p < .001$ . Those who knew a victim of road rage were also significantly more likely than those who did not to believe that their likelihood of being a victim of road rage had increased,  $\chi^2(2) = 14.9, p = .001$ .

To judge the level of community support for a range of law enforcement and intervention options designed to reduce road rage, survey respondents were asked to rank five options. The most favoured option was improved driver training, followed (in descending order) by anger management training for people convicted of road rage offences, the establishment of a police hotline for reporting aggressive drivers, establishing new laws dealing specifically with road rage and running a public information campaign on road rage.

Suggestions for reducing road rage were made by 572 respondents. Almost half of these suggestions (250) echoed, or were variations on the theme of, the five options already ranked: driver training/education (140), public information campaign (63), stress and anger management (25), new laws (12) and a hotline (10). Other common suggestions were increased penalties (107, including loss of driver's licence and confiscation of the vehicle), increased police presence on the road (66) and law enforcement (26), changes to roads (42) and licensing (25), working towards attitudinal change (27) and education in schools (19).

## Discussion

The picture emerging from this research is of widespread aggressive driving behaviours and less frequent driving-related violence. Young males emerged as the group most likely to not only perpetrate driving-related violence but also to be on the receiving end of it. Furthermore the greater involvement of males cannot be explained by their relatively (1.5 times) greater use of the roads than females. While the majority of West Australian males, and to a lesser extent females, have been on the receiving end of verbal abuse, gestures and horn-honking from other drivers, the perpetrators were most commonly young males.

Our survey results indicate that the 2-year prevalence of criminal driving-related violence victimisation is approximately one in 14, with only one driver in 70 actually being assaulted. To place this in perspective, the 2-year victimisation prevalence rate for driving-related assaults was 1.7%, while the victimisation prevalence rate for assault in Australia for just the 12 months up to mid-2002 was 4.7% (Australian Bureau of Statistics, 2003a). For both road rage and general assaults, the crime is typically perpetrated by young males against other young males.

In this research we separated aggressive driving behaviours from driving-related violence. This separation is consistent with previous research suggesting a distinction between aggressive driving behaviours and violent criminal acts (e.g., Harding et al., 1998; Novaco, 1991). There is also an important qualitative distinction between the subjective feelings of frustration and anger and the behavioural expression of these feelings. While there is evidence that females get as angry as frequently as men do (Averill, 1983; Baruch, 1999; Birditt & Fingerma, 2003) there is a fundamental difference in the ways that males and females respond to feelings of frustration and anger (Campbell, 1993). Males are more likely than females to engage in aggressive behaviours that produce harm or pain in the target (Eagly & Steffen, 1986). Our survey findings indicate that while both males and females commonly engaged in a range of aggressive driving behaviours, driving-related violence was almost entirely the preserve of male drivers. Hennessy and Wiesenthal (2001) also reported from their study on driver aggression and violence in Toronto that female and male drivers experienced similar levels of 'mild driver aggression' but that driving-related violence was far more frequent among males.

Explanations of road rage need to primarily address the high rate of involvement of young males. Violence as a response to frustration and anger is closely related to socialised views of status. While other ways of expressing male status on the road are common (e.g., driving a powerful car, speeding, overtaking), when these symbols are perceived to be challenged the psychologically vulnerable young male may resort to violence as a way of building esteem. Driving-related violence thus may reflect the availability of an opportunity to express dominance over others in a highly public setting. In this view road rage provides an opportunity for the young and, perhaps, psychologically fragile, male to express righteous indignation, to fight for honour and to challenge perceived threats to manhood.

The honour contest characterisation of intermale violence has a long history dating back to Marvin Wolfgang's (1958) pioneering analysis of homicide in Philadelphia. Most analyses of homicide and other serious violence continue to reveal the centrality of honour, esteem, reputation and righteousness as explanatory

constructs (e.g., Athens, 1980; Katz, 1988; Nisbett & Cohen, 1996; Polk, 1994; Wolfgang & Feracutti, 1967). It is the desire for reputation enhancement that appears to lay behind much of what is described in the media as 'senseless' violence (Indermaur, 1995; Katz, 1988).

The role of contextual factors becomes critical in understanding why young males tend to see violence as necessary in certain settings. First, road rage is transacted through symbolic extensions of masculinity — motor vehicles. Second, the roadway may be implicitly seen by many young men as a stage, or at least an opportunity, to express or construct their masculinity. The presence of an audience exacerbates male violence related to reputation and honour. For example Gilbert (1994, p. 361) noted how '... shame induced rage seems to be increased if a put-down or loss of status occurs in front of an audience ...'. Similarly Polk (1993), discussing intermale homicides in Victoria, noted that 'Confronted with a challenge to their honour with an audience of male peers, the central actors feel pressured to show that they are not wimps or persons that can be shoved around' (p. 39). Driving-related violence may be an extension of the way many males approach the road and driving, offering men ways to "do" masculinity' (Groombridge, 1998, p. 263). In this sense road rage may be not so much a problem for some young men, but rather a 'solution' to their requirements to construct masculinity. Perpetrating driving-related violence may increase their feelings of masculinity, where the kinds of experiences they believe signify masculinity are based on dominant social constructs of control, dominance and power.

Given the widespread cultural associations of driving with expressions of masculinity, especially through driving sports and motor vehicle advertising, it is perhaps surprising that we do not see more driving-related violence. The amount of male driving-related violence that we do observe could possibly reveal the degree to which a particular location or culture allows or endorses antisocial expressions of masculinity. It should not be surprising that within cultures and locations that tolerate and/or embrace aggressive achievement of masculinity any opportunity for the attainment and expression of masculinity will be seized. Further, rather than neutralising the need for masculinist expression, physical contact sport and competitive driving games are more likely to exacerbate the need for many males to see the road as an opportunity to express their masculinity.

In this study we found an overlap between victims and perpetrators of driving-related violent acts with the majority of perpetrators reporting they had also been victims of road rage. This suggests that 'victim' involvement may be considerable, supporting the concept of 'homogamy' of road rage proposed by Asbridge, Smart and Mann (2003), who reported that previous road rage victimisation was a strong predictor of road rage perpetration. These findings emerge in most studies of intermale violence dating back to Wolfgang's (1958) study. For example, Luckenbill (1977) characterised many homicides as conforming to a quite stylised interactional sequence of challenge and retort that essentially selects in those ready to lay down and take up the challenge (to honour). The confluence of victimisation and perpetration common to these analyses also appears to be an important dimension of driving-related violence.

Consistent with previous research (AAMI, 2003; Smart et al., 2003; VCCAC, 1999), the prevalence estimates based on victimisation and perpetration figures

varied considerably for both aggressive driving and criminal driving-related violence. Notably, respondents are more likely to admit being the victim rather than the perpetrator of aggressive driving and driving-related violence. Perpetrators of road rage behaviours may be unwilling to admit to the acts committed in order to present a prosocial image. Crimes against people are the least likely of all crimes to be self-reported (Babinski, Hartsough, & Lambert, 2001) and perpetrators may be reluctant to report serious offences (Junger-Tas & Marshall, 1999). Further, self-reports of violent victimisation within specified time periods may be subject to the bias of 'telescoping', where salient events that occurred outside the period asked about (in this research, typically 2 years) are included (Hilton, Harris, & Rice, 1998). It is also possible that road rage perpetrators engage in multiple acts of road rage, resulting in multiple victims for each perpetrator. Thus, out of every 100 incidents of driving-related violence there may be 100 distinct victims but a smaller number of perpetrators who express their violence to a range of targets.

### **Public Perceptions Versus the Reality of Road Rage**

The results from this survey indicate that while only a minority of the population have personally experienced driving-related violence the concept of road rage was widely understood and a matter of considerable concern. Exposure through knowing others who have been involved in driving-related violent incidents and media discourse are likely to have increased respondents' awareness of this phenomenon. A significant minority of respondents believed they were likely, or very likely, to be a victim of a driving-related violence in the coming year. Estimates of likelihood of victimisation were much higher than the actual rates of driving-related violence revealed by this study. It is likely that this is the result of a media amplification effect. Media fascination with road rage ensures that the concept and its possible risks remain in the public imagination.

This survey canvassed support for a range of initiatives to reduce road rage. The low prevalence of driving-related violence compared with the high frequency of aggressive driving behaviours suggests that different strategies may need to be adopted to address the different ends of the road rage spectrum. A double-pronged approach may be required with a broad campaign aimed at reducing aggressive driving behaviours at one end and more targeted measures focusing on the perpetrators of driving-related violence on the other.

A broad campaign aimed at reducing aggressive driving behaviours could be directed at younger drivers, the group most likely to engage in, and be subject to, these behaviours. Indeed, results from the survey find support was strongest for improving driver training. Information on road rage and strategies for dealing with stress and difficult situations while driving could be incorporated into driver training. This would effectively target the younger age groups overrepresented in aggressive driving behaviours.

If, as we have argued, driving-related violence is intimately related to experiences of masculinity, prevention strategies that focus purely on education, information and/or anger management are not likely to be effective. Of particular interest when considering options for reducing the incidence of driving-related violence is the perception by the large majority of perpetrators that the other party (victim)



was to blame and that they would react in the same way if the incident happened again. This suggests the need for any program run for perpetrators to focus not only on anger management but also on responsibility and the costs of violence more generally. If there were some way to make violence 'unmasculine' or a source of shame this would be helpful. However, in terms of present realities, driving-related violence is most likely to be curtailed through appealing to the perpetrators' self-interest. This means increasing the chances of detection as well as the consequences of using violence, not necessarily through fines or imprisonment but through restricting access to the very thing that is most closely linked with masculinity — power driving. In this context one method that may be particularly relevant would be to restrict access to high-power vehicles. For example, for those convicted of driving-related violence a special license category could be created which limits driving to vehicles with a capacity less than 1800cc. This may be a means of harnessing the central concern with expressions of masculinities in such a way as to create a relevant deterrent.

While support for police hotlines for reporting aggressive drivers and establishing new laws dealing specifically with road rage were not strongly supported by the public, they may be effective strategies for dealing with the predominantly young male drivers who engage in driving-related violence. At present very few cases of driving-related violence are reported to and/or recorded by the police. Even fewer result in prosecution and subsequent conviction. This is partly because of the generally low rate of reporting assaults, but is likely also a function of a resistance among police to record incidents that may have the flavour of a 'civil' dispute. The police have a distinct role to play in recognising, monitoring and responding to driving-related violence and need to be encouraged to establish enhanced mechanisms to receive reports and maintain driving-related violence data bases. The establishment of distinct driving-related violence offences will also help name and thus acknowledge this form of criminal behaviour.

In summary, this population survey of West Australian drivers revealed a low self-reported prevalence of driving-related violence, typically perpetrated by young males against other males. The West Australian public was aware of road rage, perceived it to be an escalating problem and overestimated their probability of becoming victims of driving-related violence. In contrast to the low prevalence of driving-related violence, aggressive driving behaviours such as verbal abuse and gestures were ubiquitous.

## Endnotes

- 1 Only a subsample of all respondents to the British Crime Survey were asked these questions.
- 2 While a good part of this selection process was manual, supplementary computer programming was employed to eliminate some routinely occurring diversions, such as those assaults occurring as part of a taxi fare altercation and assaults between bus drivers and passengers.
- 3 This provides a sample frame of all households in Western Australia that have a telephone number listed in the White Pages. This excludes households with silent telephone numbers and households without telephones.
- 4 This selection strategy was adopted to overcome difficulties in obtaining representative samples of males in general, and young males in particular, experienced in previous CATI surveys conducted in Western Australia.

- 5 The cooperation rate was calculated using the formula  $\text{COOP1} = (\text{interviews completed} / [\text{interviews completed} + \text{interviews terminated} + \text{interviews refused by household} + \text{interviews refused by selected individual within household}])$  detailed in the standard definitions by American Association for Public Opinion Research (2004).
- 6 Response rates vary according to the type of study and methodology used. In epidemiological studies the typical nonresponse rate is between 20% and 40% (Stang, 2003). Baruch (1999) identified the mean response rate reported in studies across a range of management and behavioural studies journals as 55.6%. As a benchmark, Baruch proposed that an acceptable response rate for surveys with conventional populations was between 40% and 80%.
- 7 There was a significant difference between males and female in regard to driving frequency. Males reported driving more hours per week,  $M 16.3, SD 15.9$ , than females,  $M 11.1, SD 10.3$ ,  $t(1037) = 6.7, p < .001$ , equal variances not assumed. In other words males drive on average about one and half times as much as females. This 'exposure effect' may influence many of the comparisons that we make and we return to this question when we compare male and female victimisation and prevalence figures.
- 8 The question asked was 'Have you been employed as a driver in any way in the past 2 years?' Figures from the Australian Bureau of Statistics (2004) suggest that only 8.2% of employed persons are currently employed in occupations categorised as 'Intermediate production and transport workers'. One possible explanation for the high percentage of drivers in the survey sample is the inclusion of persons who were previously, but are not currently, employed as drivers.
- 9 The 2-year prevalence may provide a more meaningful comparison when examining age-group effects as the years of driving exposure is much higher for drivers in the older age groups than the younger age groups.
- 10 All significance tests were conducted using chi-square analysis. Significance levels reported are  $p < .05, p < .001, p < .005$ .

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